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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/529,395	03/28/2005	Terutake Hayashi	052310	6731

38834 7590 11/28/2006

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WASHINGTON, DC 20036

EXAMINER
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PRITCHETT, JOSHUA L

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 11/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/529,395		HAYASHI ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Joshua L. Pritchett		2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 March 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/05</u> | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

This action is in response to Preliminary Amendment filed March 28, 2005. Claims 21 and 22 have been amended, claims 4 and 5 have been cancelled and claims 24-28 have been added as requested by the applicant.

### ***Specification***

The abstract of the disclosure is objected to because the abstract should be written in narrative form. Also the abstract may exceed the word limit for an abstract. Correction is required. See MPEP § 608.01(b).

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 6, 27 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Ishihara (JP 10-318733). NOTE A computer translation was used for the textual citations and a copy of the computer translation accompanies this action.

Regarding claims 1 and 3, Ishihara discloses an inlet optical part to let a polarized light from a polarized light from an illumination light source (1) and a straight polarizer (204) onto an object (A) to be observed via a beam splitter (5), a matrix type liquid crystal device (20) provided with a microlens array (7) on its top part, and an objective lens (8; Fig. 1); a light detecting part (15) including an imaging device to detect a reflected or a fluorescent light from the object to be observed via a beam splitter and lens (Fig. 1); and a control part including a liquid crystal control subpart to control each pixel of the matrix type liquid crystal device (para. 0016-0018); characterized in that it transmits the light passing through the microlens array from each microlens to each pixel of the matrix type liquid crystal device aligned in the position corresponding to the each microlens, and makes a plurality of foci on the object to be observed by the objective lens as well as controls the polarization direction of the light transmitted through each neighboring pixel of the matrix type liquid crystal device using the liquid crystal control subpart (para. 0016; Fig. 1) and the liquid crystal control subpart controls polarization of the lights transmitted through each neighboring pixel of the matrix type liquid crystal device so that they are made mutually orthogonal and makes a plurality of foci with the lights the polarization directions of which are mutually orthogonal onto an object to be observed (para. 0016-0018; Fig. 1). The liquid crystal device (20) would serve as a second liquid crystal device when the light travels back from the sample and back through the liquid crystal device on the way to the detector (Fig. 1).

Regarding claims 2 and 6, Ishihara discloses a polarizer (204) is located in the lower part of the matrix type liquid crystal device (Fig. 2a) and a polarized light transmitted through the polarizer is controlled by each pixel of the matrix type liquid crystal (para. 0016-0018).

Regarding claim 27, Ishihara teaches a method of measuring polarized light from the objective to be observed using a confocal microscope (Fig. 1).

Regarding claim 28, Ishihara teaches the polarized light from the object is rotated by the polarized light by 180-degrees (para. 0017-0019).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7-18, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishihara (JP 10-318733) in view of Hoffman (US 2001/0042837).

Regarding claims 7-18, Ishihara teaches an inlet optical part to let a polarized light from a polarized light from an illumination light source (1) and a straight polarizer (204) onto an object (A) to be observed via a beam splitter (5), a matrix type liquid crystal device (20) provided with a microlens array (7) on its top part, and an objective lens (8; Fig. 1); a light detecting part (15) including an imaging device to detect a reflected or a fluorescent light from the object to be observed via a beam splitter and lens (Fig. 1); and a control part including a liquid crystal control

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subpart to control each pixel of the matrix type liquid crystal device (para. 0016-0018); characterized in that it transmits the light passing through the microlens array from each microlens to each pixel of the matrix type liquid crystal device aligned in the position corresponding to the each microlens, and makes a plurality of foci on the object to be observed by the objective lens as well as controls the polarization direction of the light transmitted through each neighboring pixel of the matrix type liquid crystal device using the liquid crystal control subpart (para. 0016; Fig. 1) and the liquid crystal control subpart controls polarization of the lights transmitted through each neighboring pixel of the matrix type liquid crystal device so that they are made mutually orthogonal and makes a plurality of foci with the lights the polarization directions of which are mutually orthogonal onto an object to be observed (para. 0016-0018; Fig. 1). Ishihara lacks reference to the amplitude modulation. Hoffman teaches the use of a control for a liquid crystal device that controls amplitude modulation (para. 0021, 0038). Hoffman teaches the illumination device is either single or multiwavelength and the amplitude is modulated by using a matrix type liquid crystal device (para. 0018). Hoffman further teaches the amplitude modulation is applied to each pixel by a plurality of modulation frequency (para. 0018). Hoffman teaches the use of Fourier information in the amplitude modulation (para. 0014). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the microscope of Ishihara have the amplitude control of Hoffman for the purpose of controlling the intensity of the light incident to the sample to prevent from damaging the sample.

Regarding claims 8 and 15, Ishihara teaches a polarizer (204) is located in the lower part of the matrix type liquid crystal device (Fig. 2a) and a polarized light transmitted through the polarizer is controlled by each pixel of the matrix type liquid crystal (para. 0016-0018).

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Regarding claim 22, Ishihara teaches a method of measuring polarized light from the objective to be observed using a confocal microscope (Fig. 1).

Regarding claim 23, Ishihara teaches the polarized light from the object is rotated by the polarized light by 180-degrees (para. 0017-0019).

Claims 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishihara (JP 10-318733) in view of Hoffman (US 2001/0042837) as applied to claims 7 and 12 above, and further in view of Oshida (JP 2001-108684).

Ishihara in combination with Hoffman teaches the invention as claimed but lacks reference to the fluorescent marker or DNA material. Oshida teaches the use of fluorescent microscopy using a marker material where the substrate contains a DNA chip (abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the Ishihara in combination with Hoffman invention include the DNA material of Oshida for the purpose of determining the presence of a nucleotide on a strand of DNA or searching for a genetic marker.

Claims 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishihara (JP 10-318733) in view of Oshida (JP 2001-108684).

Ishihara teaches the invention as claimed but lacks reference to the fluorescent marker or DNA material. Oshida teaches the use of fluorescent microscopy using a marker material where the substrate contains a DNA chip (abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the Ishihara invention include the DNA

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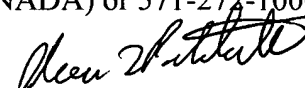
material of Oshida for the purpose of determining the presence of a nucleotide on a strand of DNA or searching for a genetic marker.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua L. Pritchett whose telephone number is 571-272-2318. The examiner can normally be reached on Monday - Friday 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew A. Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Joshua L Pritchett  
Examiner  
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